

**AMENDMENTS TO THE DRAWINGS:**

In the Office Action on pages 2 and 3, the Examiner objected to the drawings. In order to overcome these objections, replacement figures are submitted herewith. In FIG. 4, the misspelled words in the heading of columns 1 and 2 are herein corrected to reflect the correct spellings wherein the word "secion" is corrected to "section".

Furthermore, FIG. 2 is herein corrected with the designation of "Prior Art".

Approval of these changes to the Drawings is respectfully requested.

## REMARKS

### I. STATUS OF CLAIMS

Claims 1, 2, 4, 11 and 12 are "objected to".

Various claims have been amended herein. No new matter is being presented.

In view of the above, it is respectfully submitted that claims 1-12 are currently pending.

### II. OBJECTION TO THE DRAWINGS

The Examiner asserts that Figure 4 contains misspelled words in the heading of columns 1 and 2, in that the word "seccion" should be "section". Figure 4 is herein corrected to reflect the correct spellings.

Furthermore, the Examiner asserts that Figure 2 should be designated by a legend such as "Prior Art". Figure 2 is herein corrected with the designation of "Prior Art".

In view of the above, it is respectfully requested that the objections be withdrawn.

### III. OBJECTION TO THE CLAIMS

The Examiner asserts, with respect to claims 1, 2, 4, 11 and 12, that the word "transmissivity" appears to be a literal translation, and that it is believed to mean "transmission".

It is respectfully submitted that the concept of "transmissivity" is described in the specification, for example, on page 9, paragraphs 3 & 5 through page 10, paragraph 1 with reference to FIG. 4. The specification and drawings disclose and describe the meaning of "transmissivity". Therefore, it is respectfully submitted that claims 1, 2, 4, 11 and 12 should be interpreted in light of Applicant's appropriate use of the word "transmissivity".

Furthermore, Examiner asserts that claims 2 and 4 contain extra "periods" at the end of the sentence. Therefore, the claims are amended herein to overcome the objections.

In view of the above, it is respectfully requested that the objections be withdrawn.

### IV. REJECTION OF CLAIMS 1-12 UNDER 35 USC 112, SECOND PARAGRAPH

The Examiner notes that claims 1-12 are generally narrative and indefinite, failing to

conform with current U.S. practice. Therefore, claims 1-12 are amended to correct this matter, taking the Examiner's comments into consideration. No new matter has been added.

The Examiner asserts that there is very little structure recited in claims 1-12 and that these claims describe the invention in terms of functionality or how it works.

However, it is respectfully submitted that the wording of the claims is proper and acceptable, especially in light of the present amendments to the various claims. Moreover, with respect to functional recitations, MPEP 2173.05(g) states: "Functional language does not, in and of itself, render a claim improper."

MPEP 2173.05(g) further states: "A functional limitation is often used in association with an element ... to define a particular capability or purpose that is served by the recited element".

Further, MPEP 2173.05(g) gives various examples of acceptable language by stating the following:

In a claim that was directed to a kit of component parts capable of being assembled, the Court held that limitations such as "members adapted to be positioned" and "portions ... being resiliently dilatable whereby said housing may be slidably positioned" serve to precisely define present structural attributes of interrelated component parts of the claimed assembly. *In re Venezia*, 530 F.2d 956, 189 USPQ 149 (CCPA 1976).

In view of the above, it is respectfully requested that the rejection be withdrawn.

Furthermore, the Examiner notes that there is insufficient antecedent basis for "the switching" in claims 1 and 11. Therefore, claims 1 and 11 are amended to correct this matter.

The Examiner also notes that the word "type" in claim 8, renders it indefinite. Therefore, claim 8 is amended to correct this matter.

V. REJECTION OF CLAIMS 1-4, 8 AND 9 UNDER 35 USC 102(B) AS BEING ANTICIPATED BY HIROSHI ET AL. (JAPANESE PUBLICATION 06-276154)

Claim 1 specifically recites, amongst other novel features, a variable optical filter comprising "first and second filter second filter sections having corresponding first and second filter characteristics respectively with **transmissivity of each filter characteristic changing periodically along an optical frequency axis.**" See also claim 11,

Hiroshi fails to disclose, suggest or teach Applicant's claimed invention as recited in, for example, claim 1. Instead, Hiroshi et al. discloses a technique to connect, in series, a plurality of periodic filters having mutually different frequencies and to provide a filter characteristic in a desired form along an optical frequency axis on the basis of Fourier series method.

In the Office Action, it appears that the Examiner believes that the Mach-Zehnder-shaped optical filters 20 and 30 shown in Fig. 1 of Hiroshi et al. are equivalent to the first and second filter sections of the present invention as recited in, for example, claim 1. However, it is respectfully submitted that this is a misinterpretation of Applicant's claimed invention as recited in, for example, claim 1, in that Hiroshi discloses how the optical filters 20 and 30 that are connected in series have mutually different frequencies of change of transmissivity along the wavelength (optical frequency) axis. See, for example, Hiroshi at paragraphs [0013] and [0017]. More specifically, the frequency  $\Delta \lambda$  of the optical filter 20 is set to be 25nm as described in the paragraph [0019] of the specification of Hiroshi et al. The frequency  $\Delta \lambda$  of the optical filter 30 is set to be 7.5nm as described in the paragraph [0020] of the specification of Hiroshi.

Therefore, in order for the frequencies of change in transmissivity along the optical frequency axis in the Mach-Zehnder-shaped optical filters 20 and 30 are made different from each other, the difference between lengths of optical paths of two branching optical wave guides (wave guides 4 and 5 in Hiroshi) in one of the optical filters needs to be different from that of the other optical filters. As a result, in Hiroshi, even if each electric signal provided to each of the electrodes 4a, 6a and 7a in each of the Mach-Zehnder-shaped optical filters 20 and 30 is controlled, it will be impossible to realize the filter characteristic having the same frequency in both of the optical filters 20 and 30. In other words, in the optical filters 20 and 30 of Hiroshi, while an attenuation amount and parallel shifting of attenuation characteristic to an optical frequency axis direction is "variable", only the wavelength frequency is "fixed".

Please note that in contrast to Hiroshi, the present invention as recited, for example, in claim 1, recites a variable optical filter comprising, amongst other novel features, "first and second filter characteristics being set within a common variable range in the optical frequency axis direction". Thus, in Applicant's present invention, **it is possible to set the same filter characteristic** within a common variable range in the optical frequency axis direction. This is in sharp contrast to the Mach-Zehnder-shaped optical filters 20 and 30 disclosed by Hiroshi, which fails to disclose, suggest or teach how to achieve the functions of the first and second filter sections of the present invention as recited in for example, claim 1.

Accordingly, it is respectfully submitted that the fundamental nature of the present invention as recited in, for example, claim 1, is significantly different than Hiroshi.

Furthermore, Hiroshi fails to disclose, suggest or teach how the filter characteristic of one of said first and second filter sections is required to shift in the optical frequency axis direction to exceed the variable range. Hiroshi also fails to disclose how to solve the conventional problem described on pages 2-3 of the specification of the present application. On the other hand,

Applicant's claimed invention as recited in, for example, claim 1, recites "a control section for," when the filter characteristic of one of said first and second filter sections is required to shift in the optical frequency axis direction to exceed the variable range, "relatively controlling the filter characteristics of said first and second filter sections". Neither Hiroshi nor any of the cited prior art disclose or suggest such a technique.

Accordingly, it is respectfully submitted that the fundamental nature of the present invention as recited, for example, in claim 1, is significantly different than Hiroshi et al.

Although the above comments are specifically directed to claim 1, it is respectfully submitted that the comments would be helpful in understanding differences of other rejected claims over Hiroshi et al.

In view of the above, it is respectfully submitted that the rejection is overcome.

VI. THE REJECTION OF CLAIMS 7 AND 10 UNDER 35 U.S.C. §103(a) AS BEING UNPATENABLE OVER HIROSHI ET AL. (JAPANESE PUBLICATION 06-276154)

The above comments for distinguishing over Hiroshi et al. also apply here, where appropriate.

In view of the above, it is respectfully submitted that the rejection is overcome.

VII. THE REJECTION OF CLAIMS 5 AND 6 UNDER 35 U.S.C. §103(a) AS BEING UNPATENABLE OVER HIROSHI ET AL. (JAPANESE PUBLICATION 06-276154) IN VIEW OF DENKIN ET AL. (U.S. PATENT 6,266,169)

The above comments for distinguishing over Hiroshi et al. also apply here, where appropriate.

In view of the above, it is respectfully submitted that the rejection is overcome.

VIII. CONCLUSION

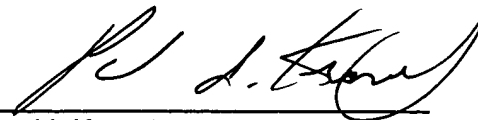
In view of the above, it is respectfully submitted that the application is in condition for allowance, and a Notice of Allowance is earnestly solicited.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

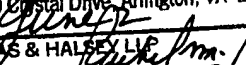
Respectfully submitted,

STAAS & HALSEY LLP

Date: June 2, 2005

By:   
Paul I. Kravetz  
Registration No. 35,230

1201 New York Avenue, NW, Suite 700  
Washington, D.C. 20005  
Telephone: (202) 434-1500  
Facsimile: (202) 434-1501

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